

# The Mining Journal

Established 1835

Railway & Commercial Gazette

Vol. CCXLV No. 6277

LONDON, DECEMBER 9, 1955

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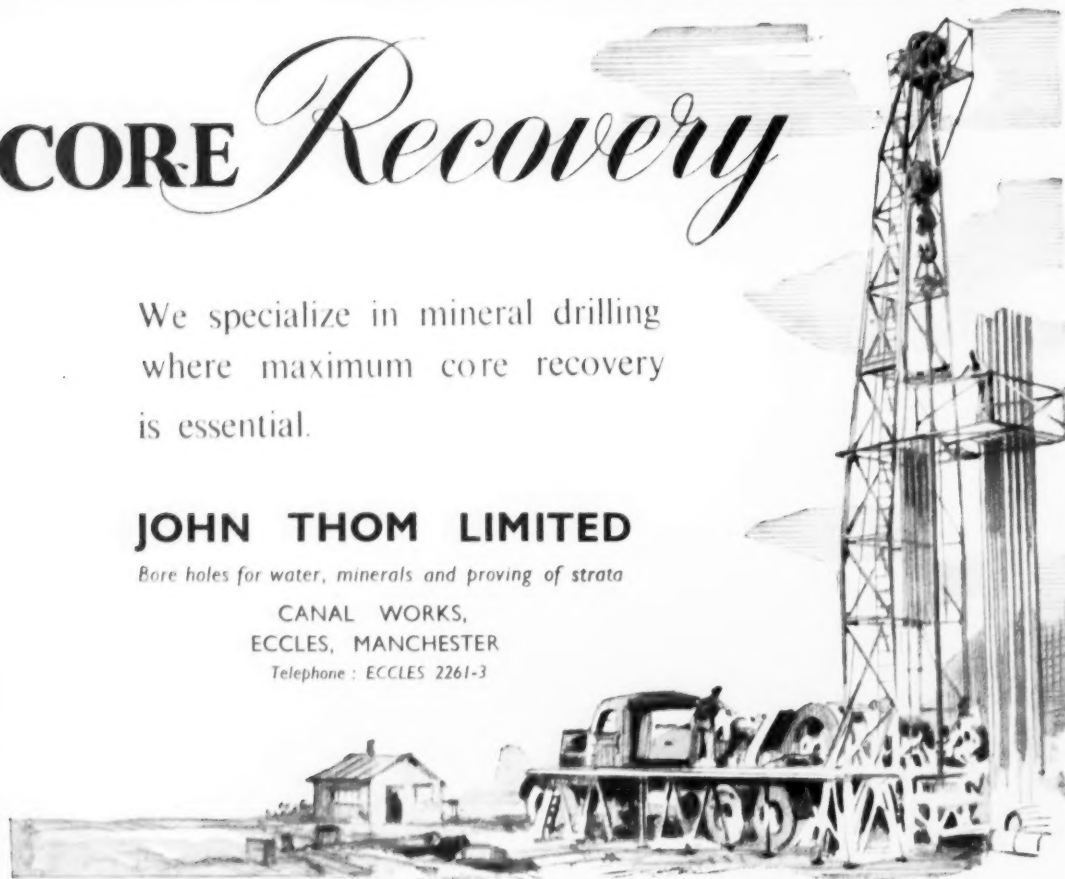
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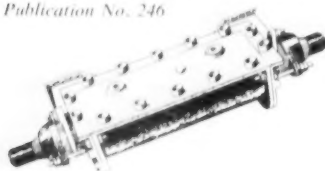
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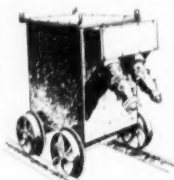
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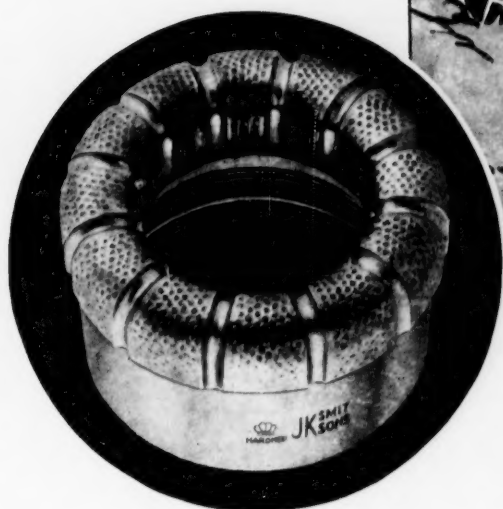
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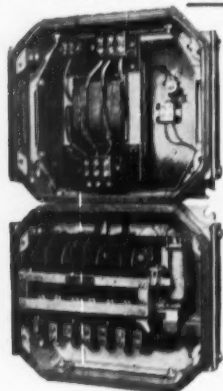
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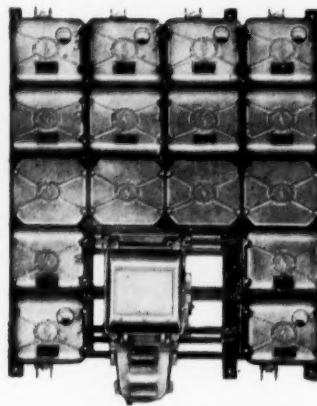
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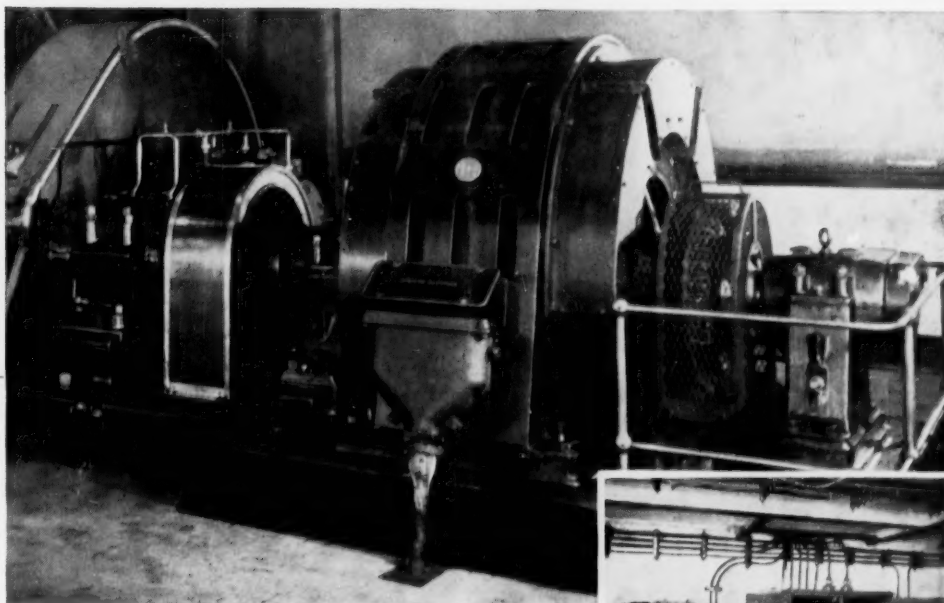
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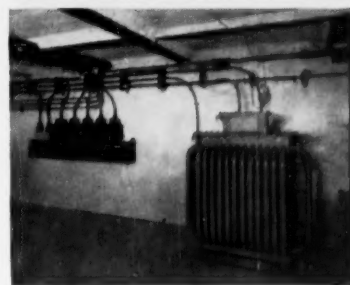
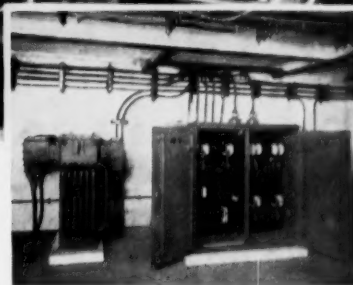
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## NOTES AND COMMENTS

### Lord Bruce Proposes Commonwealth Minerals Policy

The plea made in the Lords last week for an imaginative scheme for the development in the British Empire of resources of vital raw materials is to be warmly welcomed. The Government has promised that the proposal will receive careful examination.

Supporting his arguments by extracts from the Paley Report, Viscount Bruce of Melbourne drew attention to the seriousness of the raw materials problem looming ahead, but emphasized that the British Empire was in an incomparable position to meet future needs. He advocated as a first step the formation of a competent group, which should be given the task of examining the raw materials position in relation to the industrial requirements of (a) the world, (b) the sterling area, and (c) the British Empire. Once these facts had been obtained, the group could go on to survey the Empire's resources and the possibilities of developing them. The objectives of the proposed survey would be to decide where development would be really economic, and whether it would save us dollars by supplying our own needs or earn us dollars by meeting the unquestioned needs of the United States.

In view of the importance of the time factor, it was urged that immediate action should be taken by the U.K. Government, who should at the same time communicate with all the Governments of the different parts of the Empire, offering them representation on the group. This would allay Britain's anxiety that she might be accused of dictating to the Empire and would also give an opportunity to any countries prepared to co-operate of sending an expert who could give valuable assistance. The group's report would embody recommendations as to the particular points where action should be taken and would be submitted to a meeting of Government representatives from all parts of the Empire with a view to co-operative action in the most fruitful fields. He made no suggestions as to the machinery which could be set up for long-term co-operation, but suggested that this might well be a subject on which the group could make recommendations.

It will be seen that the suggested scheme is broadly in line with proposals which have previously been put for-

ward, both at the I.M.M. Symposium on Minerals Resources Policy and in this Journal. Lord Bruce is of the opinion that the cost would be large indeed, but sees no reason for hesitation on this score. In his view a bold and imaginative scheme for the development of the British Empire's resources of vital raw materials would receive a most enthusiastic welcome in the United States and practically unlimited financial support.

The recent Symposium on Minerals Policy revealed a growing awareness of the danger of a world scramble for minerals in which the Commonwealth, despite its immense resources, might be faced with critical shortages of essential materials. The U.S. Administration has a positive minerals policy backed by the statistical and research facilities of the U.S. Bureau of Mines. As we have previously pointed out, the problem of formulating a programme of minerals development for the Commonwealth, based on an appraisal of existing and potential needs, presents far greater difficulties than in the United States. Nevertheless recognition of a problem is the first step towards its solution.

The need for a long-term, co-ordinated approach to the development of the Commonwealth's mineral resources becomes increasingly acute as world consumption of raw materials continues to expand. There is every reason to anticipate that, irrespective of the temperature of the cold war, the coming years will witness a further substantial increase in the requirements of the U.S., which now absorbs over ten times as much copper, lead, zinc and aluminium *per capita* as the average throughout the rest of the world. The ever-growing U.S. demand on available mineral supplies is likely to be paralleled by an even greater increase in the Commonwealth's own needs, due not only to industrial expansion in Britain and the Dominions, but also to the development of backward areas and consequent improvement in living standards.

### Influence of U.S. Automobile Industry on Lead and Zinc

During the past year the zinc mining industry has made a substantial recovery in the United States; it has not yet reached what the producers regard as a satisfactory price level and it has been achieved by a stockpiling programme

that they consider inadequate. But of the fact of recovery there is no doubt. Much the strongest demand has come from the die-casting industry and it has kept special high grade metal in consistently tight supply in spite of the widening of its premium. Die-casting now accounts for about 38 per cent of total zinc consumption against only 12 per cent in the United Kingdom. It bids fair shortly to surpass galvanizing and thus become the most important outlet; and much the biggest user of die-cast zinc is the automobile industry.

The interesting feature of this development is the extent to which it increases the dependence of the lead-zinc industry on automobile manufacture. Already the chief lead outlet in the United States is in battery manufacture (about 30 per cent of total consumption), followed by tetraethyl, absorbing 10 per cent, whereas in the U.K., cabling and construction work take bigger proportions than either of these motoring outlets. Furthermore, as die-casting is likely to take a bigger proportion than zinc so, with the growing use of 12 v. against 6 v. batteries, the battery industry is likely to be a proportionately bigger user of lead, though competition from toughened polystyrene must be expected to increase.

How far this dependence on a single industry, and traditionally a volatile one, represents a source of weakness for lead-zinc mining, it is difficult to say. The American automobile industry now bulks so large in the total American economy that few industries can expect to be totally free from cold when Detroit sneezes, whether they are direct suppliers to the automobile industry or not. Furthermore, the automobile industry has been much more stable in the past few years than might have been expected in spite of rolling adjustments or even recessions and it has yet to be shown what effect a guaranteed annual wage (which will probably be strengthened by the unions next year) has on maintaining a stable level of output. For the time being this is no more than an interesting trend for the lead-zinc mining industry, which will repay watching, but if a guess has to be hazarded on the likely effects, it must be that while the industry will not necessarily catch any more virulent colds from Detroit it seems likely to catch them more readily.

### The Coal and Iron Deposits of Swaziland

In the White Paper recently published on economic development and social services in the High Commission Territories, a brief reference was made to the existence of iron ore and coal deposits in Swaziland. Although investigation of these deposits will not be completed until 1957, the Geological Survey Department of Swaziland has produced an interim memorandum. This memorandum is designed to give the relevant information to any party interested in the acquisition of mining rights.

The main iron ore deposit, located at Bomvu Ridge near Darkton in North West Swaziland, consists of a high grade haematite with an indicated grade of 64 per cent iron and 35 per cent silica. Reserves are estimated at between 40,000,000 and 50,000,000 tons. There are also deposits of low grade ore in South Swaziland, although these are unlikely to be exploited at present. The coal deposits form a north-south belt in Eastern Swaziland 80 miles long by five miles wide and have been geologically mapped by the Geological Survey Department.

Mining rights in Crown Mineral Areas, in which the Bomvu Ridge iron deposits and certain of the coal deposits are located, may be granted, on application, by a Special Authority issued by the Resident Commissioner, Swaziland. Where coal deposits are located on mineral concessions, applications for mining rights should be sent to the con-

cessionaires. New mining legislation is at present under consideration and, if approved, will have the effect of facilitating the acquisition of mining rights in mineral concession areas.

A complementary investigation into the possibility of developing hydro-electric power from the Great Usuto River is currently progressing, and it is hoped that a report will be issued before the end of the year.

### Kaiser's Ambitious Expansion Programme

In reviewing the U.S. programme for the expansion of aluminium production, we referred recently to Kaiser's Aluminium's plans to add 90,000 tons of annual capacity. This project is now dwarfed by a new expansion programme announced by the company, which is estimated to cost \$280,000,000 and will increase Kaiser's basic producing capacity by over 50 per cent to a total of 654,000 tons annually. The company's output will then be exceeded only by that of Alcoa, whose plans call for 735,000 tons a year by mid-1956 although this latter group's eventual capacity will be considerably more. Reynolds Metals, at present the second largest producer with a current output of about 415,000 tons, which is to be raised to 550,000 tons by announced expansions, will then take third place.

Major projects under the new Kaiser programme will be a 220,000 ton aluminium metal plant at Ravenswood, Western Virginia, and a 500,000 ton alumina plant to be built near Baton Rouge, Louisiana. It is planned to break ground for these plants by next April. In selecting the localities Kaiser has been influenced by the growing difficulty of obtaining low-cost hydro-electric power. The company has therefore chosen sites where it can be assured of a long-term supply of economical power derived from coal.

Electric power for the Ravenswood plant will be supplied by the Ohio Power Co., an operating subsidiary of the American Gas and Electric Co. The contract provides for 50,000 kW. for a period of 40 years and is believed to be one of the largest power contracts ever negotiated between two private concerns. The Ravenswood plant will be about 50 miles from the power station, which is fuelled by coal, strip-mined by the power supply company at a site about four miles away, and brought to the power plant by conveyor belt.

The cost of power is expected to be about 2 c. more per pound of aluminium produced than that obtained from hydro-electric stations in the Northwest. It is understood however, that the higher cost of coal power will be more than off-set by substantial savings in transportation costs, both for raw materials, interplant shipments, and shipments of aluminium mill products to market.

The Ravenswood aluminium plant will be located immediately adjoining a new \$96,000,000 sheet and foil rolling mill now under construction. It will be connected by economic water transportation with the company's alumina plants and with its Jamaica bauxite mines. Mr. D. A. Rhoades, vice-president and general manager of Kaiser, points out that the direct flow of raw materials and substantial overall savings in freight will place the company in a strong position to compete with foreign aluminium production at remote locations.

As for the future capacity of the U.S. to absorb the increased production, Mr. Rhoades said that the decision to go ahead immediately on this next major phase of the company's long-range planning was based on surveys recently completed by Kaiser's own market analysis department. These surveys indicate that in the U.S. aluminium usage will increase from the estimated consumption of some 2,000,000 tons for the current year to over 4,000,000 tons by 1965.

# Western United States

(From Our Own Correspondent)

Portland, Oregon, November 26.

November 7 and 8 marked the meeting of the Western Governors' Minerals Policy Conference at Sacramento, California, and November 9 the Western Governors' Advisory Council. The meetings were called by Governor Knight of California "to develop recommendations for a long range mineral and mining policy that can be offered to Congress and the Administration to re-establish a sound mining industry and to maintain an adequate mobilization base in case of emergency". The invitation went to twelve western states and Alaska and a total of 500 delegates attended, including six state governors and the governor of Alaska.

## IMPORTANT RECOMMENDATIONS

Many recommendations were made to the council by the conference, among the more important being, a free domestic market for gold and prohibition of the sale of monetary gold for industrial uses; a revision of tariffs on minerals to be geared to foreign wage standards so that as foreign workers were benefited by increased earnings the tariff would be decreased accordingly with free trade accomplished when foreign wages reached a point comparable with those of the United States; a revision of the policy by which vast tracts of public lands are withdrawn from exploration and appropriated to public purposes; a research programme by the mining industry in which the states and government would participate; adjustment of tax laws regarding depletion, depreciation and similar items.

In general the subjects discussed and resolutions passed were such as arise perennially at such conferences. From the Conference the recommendations went to the Council which will put them in final shape for transmission to the governors of all of the western states who will then take action towards bringing them to the attention of Congress and the Administration.

Mine, Mill and Smelter Workers' Union sprung a surprise recently when its executive board issued a public statement—"We do not believe nor do we advocate that Communism is the solution to the problems of the American working people." This statement comes while the union is awaiting trial by the Subversive Activities Control Board. Its long-time secretary resigned only recently under pressure while under indictment for perjury in connection with his non-Communist oath. The personnel of the other leaders is virtually unchanged. Under these circumstances it is natural that the public should view the statement as having been made with tongue in cheek. Another angle is that Mine, Mill, which was expelled from C.I.O. for its Communist affiliations, is very anxious to be included in the pending merger of C.I.O. and A.F.L. but has so far been rebuffed with little likelihood of a change of attitude. When the merger is effected, if without Mine-Mill, the logical move will be raids on the latter's membership and that could lead to serious trouble.

One of the addresses at the recent meeting of the American Mining Congress at Las Vegas, Nevada, was by Senator Barry Goldwater of Arizona in which he emphasized the need for more active public relations on the part of the mining industry. He cited the public educational programmes of the railroad, oil, automobile and steel industries and cited the fact that there is no similar co-operation on the part of the mining companies. Unfortunately the senator's words are only too true, perhaps a manifestation of that "rugged individualism" that is characteristic of the industry.

There has been a notable trend recently on the part of oil companies to diversify their interests by entering various phases of mining. First the move was toward uranium, Kerr-McGee having invested heavily in the Colorado Plateau in the early stages of its development. Other oil companies followed and now many are going in for other metals than uranium. Union Oil, through its geophysical subsidiary, pioneered the development of Pima Copper in Arizona, Texas Company has teamed up with Shattuck Denn to form Shat-Tex for exploration and development of nonferrous metals, Gulf Oil has organized Gulf Minerals Corporation for a similar purpose and Black Mammoth has recently acquired Sonoma Quicksilver Mines in California.

During the uranium boom many established mining companies have entered that field and now we see a trend the other way with uranium companies branching out into other mining ventures. Utex Exploration (Charles Steen) has acquired fluorite deposits in Colorado, Shiprock Uranium has bought the Jump tungsten mine in Colorado's Boulder district and Temple Mountain Uranium in Utah is mining and shipping lead-zinc ores.

In an address before the American Mining Congress Mr. Sheldon Wimpfen, A.E.C. operations manager in the Colorado Plateau area, made the statement that the total tonnage of uranium mined through this year is expected to exceed 1954 by 43 per cent. Ore reserves have more than doubled during the past year and milling capacity has increased more than 500 per cent over 1952.

American Smelting and Refining Co., which has been acting as buying agent for uranium ores since 1948, will terminate these activities on December 31. A.S. and R. has been operating three stations in the Colorado Plateau area, one at Riverton, Wyoming, and one at Edgemont, South Dakota. A.E.C. is seeking another operator to carry on the work. Anaconda has stopped receiving ore on account of A.E.C. at its Blackwater, New Mexico plant, because the output of the Anaconda owned mine will keep the plant running at capacity.

## THE TRADITIONAL GOLD PRODUCERS

Nevada, known in the past for its gold and silver bonanzas, again is coming into the picture as an exporter of iron ore. There are a number of high grade hematite and magnetite deposits, none of them of sufficient size to sustain a blast furnace. Three or four years ago Nevada was shipping these ores to Japan at the rate of approximately 150,000 tons a year but the shipments were discontinued when a supply was made available from the nearby Philippines. Now Simplot Iron Co. has resumed shipping from its mine in Lander County and is reported to have orders for 140,000 tons.

Idaho-Maryland, which next to Homestake was the largest gold mine in the country before order L-208 shut down all gold mines in October, 1942, is now definitely in the tungsten business. The tungsten deposits, known to exist for some time, have been developed to the point that regular shipments to a custom mill are being made while the company was operating a pilot plant at the mine. A satisfactory flow sheet has been worked out and the new mill is expected to be in operation early in 1956. Idaho-Maryland is still working its gold veins, largely through tributors, but at present tungsten is the major operation although the company is also developing some uranium claims in Utah. Perhaps uranium may pave the way toward a new lease on life for some of California's old gold mines, as the finding of favourable indications in some of them is causing many of these old properties to be examined although as yet none has shown a commercial ore-body.



## Mining in Northern Sweden

Six representatives of Britain's leading mining publications recently completed a ten day visit to Sweden at the invitation of the Atlas Copco Company. This was the second trip in two years for most of the members of the party but whereas two years ago the mines visited were in Central and Southern Sweden, the trip just completed on November 27 was to visit metalliferous mines in the Northern part of Sweden and included Kiruna and Malmberget, both north of the Arctic Circle, as well as Boliden, Kristineberg and other mines in the Boliden group.

Although the most penetrating general comment which comes to mind after visiting half a dozen metalliferous mines in Northern Sweden is that mine management strives to provide miners with relief in the job rather than from the job, the elaboration on the technical and operational efficiency of Swedish mining practice which this comment connotes will have to await the appearance of a series of articles to be published in *The Mining Journal* in the early part of next year.

Meanwhile, the peripheral but nonetheless essential activities undertaken by the mining companies forms the general topic of the following brief article.

Broadly speaking, the well being of the mining employees both in the mine and outside it is a prime consideration of mine management. While the facilities and amenities available to the miners and in many cases their families, does not lend itself to a valid basis for comparison of similar schemes operating in other mining fields, some general comment and certain particular remarks would not be amiss. In the first place it must be borne in mind that the mines visited were in most cases well off the beaten track of civilization so that the incentive, indeed necessity, to cater for more than the miners' physical well-being can be viewed

as a prerequisite for the maintenance of an adequate labour force. But having said that, it is still very much to the point to state that the Swedish mining companies, without exception, have carved happy and comfortable mining communities out of the bare wilderness.

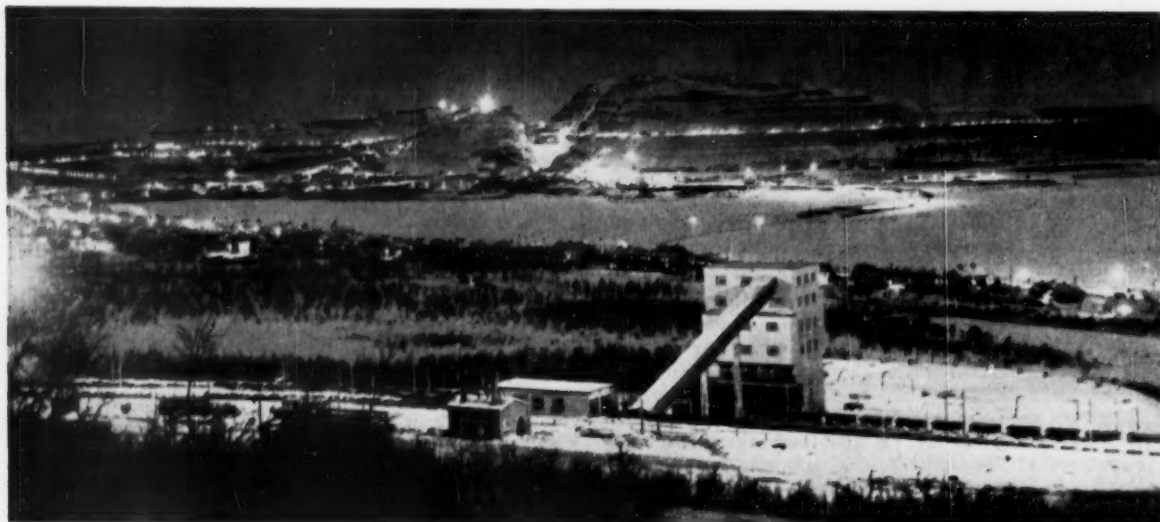
The town of Boliden, which is not far south of the Arctic circle, provides the best example perhaps of the way in which mine management has successfully grappled with the twin problems of mining and town planning. Twenty years ago, Boliden was not much more than a forest-clad wilderness whereas now it has a population of more than 2,500 people living in well planned houses equipped with all modern conveniences and fully served as to their civic needs with schools, community centre, stores, recreation facilities, and all the rest that goes to make up a well balanced community life.

One interesting point observed at Rävliiden, a part of the Kristineberg Mining Company, which is in the Boliden group, was a rest hall for mineworkers; another seen at Langsele, a wholly owned subsidiary of the Boliden Mining Company, was an underground bunkhouse where the drillers and the slusher loader operators could rest and warm themselves between their respective cycles of operation. Further, at Malmberget it



British Technical Press Party in Sweden

(Left to Right): Frank Higham, Editor, *The Mining Magazine*; W. P. T. Riley, Editor, *Mining Equipment*; R. Bruce Dunfield, Joint Editor, *The Mining Journal*; Harry Trigg, *Sydney Barton Ltd.*; Cyril Middup, Editor, *Mine and Quarry Engineering*; H. Magnusson, *Atlas Copco*; Fred Harley, Editor, *Iron and Coal Trades Review*; L. Lindkvist, *Atlas Copco*; George Fraser, Associate Editor, *Colliery Guardian*

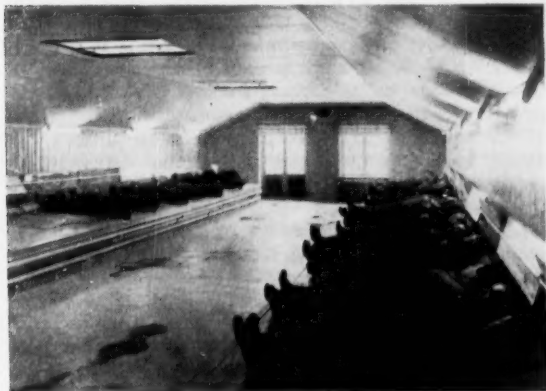


Flood lighting on the slopes and terraces of Kirunavaara. In the foreground are the Luossavaara sorting plant, Lake Luossajarvi and the railway



is planned to instal underground kitchen arrangements so that the miners may receive hot meals each day, thereby eliminating once and for all the telltale label of so many manual workers—the ubiquitous lunchpail.

At first sight, the question of extreme cold bulks large when considering the problems ancillary to mining operations which had to be overcome to make Kiruna a viable community, lying as it does well within the Arctic circle. But thanks to the peregrinations of the Gulf Stream the average annual temperature is only 5 deg. C. lower than for the environs of Stockholm. Thus, the real difficulty was to overcome what could be a depressing environment due to the long winter darkness which is only in part compensated for by the light summer nights.



Rest hall for workers at Rävlieden minefield

Evidence of an overall plan, designed with the existing climatic conditions in view, is well to the fore and, since 1900 when the first town-plan was drawn up (obviating, incidentally, the shanty town usually associated with a new mining settlement) the Grangesberg group to which Kiruna belongs has made every effort to create the best possible conditions for the mineworkers. Home ownership is encouraged and about 300 of the company's staff now have homes of their own. On inspection these houses, generally speaking, consisted of two to three rooms with bathroom and kitchen, parquet flooring, draught-proof windows, central heating, washing machines and refrigerators.

#### NO SHORTAGE OF LABOUR

The abundance of cheap electricity, some idea of which is gathered from the illustration, does much to impart a cheery atmosphere during the long winter darkness. Moreover the town of Kiruna, though small—about 15,000 people in all—boasts a tramcar system and a novel extension of this is that one operates on the main haulage way of the Kiruna mine as a man-riding vehicle. The town has most of the amenities and facilities enjoyed by larger, but perhaps less well endowed communities, and this, in combination with the excellent facilities provided at the mine itself has done more than anything else to ensure against a shortage of labour. As the estimated ore reserves at Kiruna total over 2,000,000,000 tons, equivalent to a mine life of at least 200 years, town planning quite obviously is based on the long-term view.

Although the foregoing only attempts to lift a small part of the curtain on the ancillary activities so intimately connected with Swedish mining life, it is intended that in due course many of the extremely interesting mining techniques, processes, and machines, used in Northern Sweden's mining industry will be described in these pages in considerable detail.

## Aeromagnetic Survey Reveals Norwegian Ilmenite

During August-September, 1954, Hunting Geophysics Ltd., one of the nineteen companies of the Hunting Aerial Survey Group carried out an aeromagnetic survey of some 300 sq. miles of country in south-western Norway on behalf of the mining company Titania A/S of Sokndal. The object of the survey was to discover the location and extent of ilmenite deposits and its success is revealed by the fact that, when diamond drilling operations commenced in sequence to the aerial and ground magnetometer surveys, the first aeromagnetic anomaly to be examined by diamond drilling revealed the Tellnes deposit, containing more than 100,000,000 tons of high grade ilmenite.

This survey is of special interest in that it is the first in Europe the results of which have been made public. The scene of the contract is an area some 300 sq. miles in extent between Egersund and Sokndal in south-west Norway. The terrain is very dissected, and is a difficult area for aeromagnetometer work because magnetic anomalies weaken as the square of the distance from the ore deposits which cause them. In order to record a true measurement the aircraft aims at maintaining a constant height above the ground.

#### AERIAL SURVEY

Photographic cover of the survey area was first of all obtained by an Oxford aircraft of Hunting Aerosurveys Limited, and mosaics were constructed from the vertical photographs in the firm's laboratories for the navigation of the aeromagnetic work.

A Hunting Percival Survey Prince, with tail-mounted magnetometer, then flew out to Norway towards the end of August, 1954, and based on Stavanger airport, covered the area on a line spacing of 500 metres at a constant height above ground of 500 ft. Certain areas were also covered with a line spacing of 250 metres at a height of 300 ft.

When the flying, which took three weeks, was complete, the aeromagnetic records and data were sent back to England for plotting and the final production of total magnetic intensity maps.



Aircraft in flight with magnetometer detection head slung amidships

As a result of the conclusions reached after a study of the aeromagnetic maps, a programme for a ground magnetometer survey was drawn up to cover apparently promising areas, and the results of this survey corresponded closely to the airborne magnetometer measurements.

Titania then took the final step in the prospecting sequence to prove the new ilmenite orebodies.

It will be recalled that the full techniques of air survey methods of mineral exploration and development were described in *The Mining Journal* of December 12 and 26, 1952.

# Recent Ancillary Devices and Their Use in Metallurgical Plants

By C. C. DOWNIE

A review of a range of wet metallurgical plants engaged on extracting different metals has revealed that while many of the more extensive enterprises employ the latest ancillary devices, not a few of the smaller works are content with less elaborate equipment. This is perhaps more apparent where some of the rarer metals are dealt with, where slight loss of steam or minor leakages of steam and water, are of little account compared to the value of the ultimate product. The engineering aspects differ materially in the latest practices in handling base metals, and correspond more to those of the modern chemical factory. The following article describes some of the ancillary devices used in metallurgical plants.

One of the latest types of boiler houses is intended for installation in industrial areas. This chimneyless unit is claimed to remove 98 per cent of the entrained fly ash and dust contained in the flue gases, by means of two electric filters, and holds good even where inferior fuels are burned, which may contain ash contents of some 35 per cent. With the need for a chimney thus rendered superfluous, the plant, which can be varied as required by local conditions, can be incorporated in cities or densely settled territory. The boilers are heated by a special mill furnace using a mixture of sludge, sifter dust, and middlings, and which latter, by means of plate belts, are fed to the mills. It is claimed that 85 per cent of the requisite combustion air is heated to 365 deg. C. in an air pre-heater, and there are numerous other features which make for space economy, etc. (Other boiler developments are seen in various designs of the Steinmuller grate, the single-flue La Mont boiler by Oschatz, and those built of Mannesmann tubes, to mention but a few.)

## WET EXTRACTION PROCESSES

Leaving aside developments in valves and pumps, a number of other accessories have been improved on to facilitate wet extraction activities, and ensure various economies. For boiling and heating purposes, the use of exhaust steam presupposes that this is free from oil, and where the steam hails from steam engines, it is almost invariably charged with oil. While a number of de-oiling plants are available for this purpose, an improved type of extractor operates without the conventional impact and deflection vanes. The separation is effected by means of a system of vibrating chains.

The steam enters through a central intake pipe, and in passing into the extractor is subdivided into numerous annular streams, by telescopic stubs located at the end of the tube, and the steam so divided is then conducted through a system of chain screens, while guide partitions determine the path it takes. The partitions are situated between each two or three chains, and are open at alternate ends, whereby the steam is compelled to pass from the centre outwards through the successive chambers so formed, and along the chain screens contained within them. In so doing, the oil is precipitated on the chain links, and a large area is offered for this precipitation, since the entire surface of numerous chain links is available for this purpose. The oil collected on the latter is continually shaken off and caused to run down, due to the incessant slight movements of the chains and chain links, induced by the force of the passing steam. The chain links are always kept ready for receiving fresh oil in this way.<sup>1</sup>

Apart from boiling and heating purposes, the need for preventing oil from entering water used for electrolytes for different refining activities, has been the subject of much research, as it can interfere with systematic deposition in various ways. In the matter of feed water preparation, an improved tube type dehardening plant has been evolved,

wherein a lime trap is arranged between the thermic stage (cascade) and the tube dehardener. This is in order to prevent any pieces of lime from lodging in and clogging the dehardening tube, and which relates to any lime which happens to break off in the cascade.<sup>2</sup> In the same way as pure feed water is of primary importance in outlandish districts, so also is the means of economizing in oil itself, and for which purpose used-oil reconditioning plant has recently been improved upon. Briefly, this comprises an electrically heated regenerator, which extracts from the oil all mechanical impurities, and the products of decomposition, in a single operation, consisting of chemical treatment. At the same time, the treatment neutralizes any acids in the oil, whereby it can be directly utilized for its original applications, and thereby saves the costs of replenishing with fresh oil.<sup>3</sup>

## IMPROVED STEAM PURIFIERS, TRAPS, AND SHUT-OFF COCKS

For the purpose of keeping boiler scale, mud, or soda from being entrained in steam, a patented device has been evolved. Steam enters by way of a straight vertical pipe, of either square or circular cross-section, which is flared outwards and doubled back at its lower-end, in trumpet fashion, while the separator is located below this section. What steam comes from above, is spread out and upwards along the curved path thus formed, either in two opposite directions, or over the whole circumference.

All the specifically heavy contents, ranging from particles of mud and soda, to grains of sand, and ground-off particles of metal, are flung downwards or radially upwards by the centrifugal force. They are urged outwards into special discharge nozzles arranged along the circumference of the separator disc, and from thence pass into the mud container.

## FEATURES OF THE PRODUCTION OF DRY STEAM

Another feature is the production of perfectly dry steam, which has been cleanly separated from the screen of water, and which is due to the sharp edges provided at the entrance to the water-discharge nozzles, while all tendency to produce eddies is forestalled.<sup>4</sup> Not a few wet metallurgical plants are guilty of suffering from leaky steam traps, which not only cause appreciable steam losses, but as a result of the continued enlargement of the crack, through steam passing along the leaky valve, develop further in the course of time.

A brief account of the researches carried out on this feature revealed that a crack of cross-sectional area of some 0.00075 sq. in., is liable to increase to 0.0125 sq. in. in two hours. It has further been computed that the loss of steam through this passage within this time, at an operating pressure of 140 lb. p.s.i., will amount to 80,000 lb. of steam. The interest of the plant in having a running check on steam traps will thus be obvious, although it has to be admitted that many plants still have no such check.

Special instruments have been evolved for detecting whether steam or condensate only flow to the trap, and one of these is built into the condensate line ahead of the trap. The upper portion of the instrument is filled by the condensate to the level of the pointer, on the outside of the window, and when steam now enters through the trap, it acts upon the surface of the water level, and forces it downwards. By this means, any leakage of steam becomes immediately apparent, as the pointer can be observed at any time at a glance.<sup>6</sup>

#### IMPROVED SEALING IN PIPE-LINE UNITS

Regarding shut-off cocks, most of those used in pipe-lines either for dealing with liquids or gases, engage a plug set right into the metal housing, and with such designs, sealing must be effected by the contact of the metallic surfaces. It thus involves lapping-in of the plug and housing, and necessitates exact fitting. The sealing surfaces are exposed to the continuous action of solutions, gas, or steam, passing through the line, and also from wear resulting from friction from repeatedly opening and shutting. The tightness of the shut-off is accordingly impaired after a period of use; and necessitates laborious and costly re-grinding, while another drawback, which renders the same repair necessary, is the frequent seizing of the plugs in the housing. An improved patented shut-off forestalls these disadvantages, and this plug does not come in contact with the metal housing, but is fitted into a so-called sealing or insert sleeve. This in turn is seated in the cross-bore in the housing, and by means of a key is secured against rotation. The plug is made of non-rusting special steel, while the insert sleeve is made from a select elastic material.

It is claimed that positive sealing is at all times secured, due to the absence of metal-to-metal sealing surfaces, and by tightening the lower plug whenever necessary there is the further possibility of setting up the elastic insert. This insert sleeve may be exchanged without difficulty, and after a lengthy period of use, restores the shut-off to its new value. The material of the housing is rated for different pressures according to whether liquids, gases or steam have to be dealt with, i.e., up to 225 lb. p.s.i., and the shut-offs are made for connection flanges as well as couplings.<sup>7</sup>

#### PIPE-LINE JOINTS, PACKINGS, AND PRESSURE COVERS

The passage of producer gas to various furnaces, zinc retorts, and copper roasters, not to mention nickel reduction towers, and until recently, to extensive chrome calcining hearths, involves the use of considerable lengths of pipe-lines, and the joints for these have been the subject of much research. One of the earlier expedients to prevent leakage from socket joints was the Kiel cap, which comprised a hollow cylindrical sleeve or collar surrounding the joint, and welded on either side to the pipe. In the event of leakage in the lead packing, a pressure equal to that in the pipe-line will gradually establish itself in the hollow space, and no gas can escape, in spite of the failure of the leaded joint, if the cap has been properly welded. An inspection hole, closed by a  $\frac{1}{4}$  in. threaded gas plug is provided on top for inspection purposes.

This arrangement has been improved by first having the two pipe sections butt-welded, and over this is slipped a one-piece sleeve, which by a fillet-weld, is then welded to the pipe, forming a hollow space. Due to the fact that it is formed by three separate welded seams, although only applicable to smooth pipe, this joint is claimed to give reliable results.<sup>8</sup> Different models of sleeves designed by Seiwert have been improved in the form of non-slidable sleeves for socket joints, and as expansion joints. These

may be put on and removed, or re-used elsewhere, without interrupting service, and can be employed for pipes of every kind and irrespective of the type of joint on hand.

In other directions, stuffing box packings for reciprocating rods on pressure pumps, compressors, and other units, have been developed in different numbers, to meet the needs of the various pressures against which they are intended to seal. They comprise rings of square section, either of one or two pieces, hollow inside, and filled with a composition of high grade lubricants, and made of selected white metal. Each of the several rings is slightly deformed due to the plasticity of the white metal upon compressing the packing by drawing up the stuffing-box cap, whereby some lubricant is caused to issue through the outlet holes, and suffices for pressure up to 7,000 lb. p.s.i. Heating of the sealed parts is entirely avoided, as the lubricated white metal has a very low co-efficient of friction. Electrolytic copper is substituted for the white metal for packings at temperatures above 300 deg. C. and is used for sealing spindles on main shut-off valves, slide valves, quick-acting valves, etc.<sup>9</sup>

#### IMPROVED PATENTED HIGH-PRESSURE COVER FOR PRESSURE VESSELS

In the matter of pressure vessels, which are necessary in certain treatments of copper and nickel mattes, it has been found that difficulties of providing tight covers for the openings grow as the pressures are increased. (Pressures in the chemical industries, however, go still higher, and are frequently operated at 14,000 lb. p.s.i.)

The pressure vessel, as a rule, is provided for this purpose with a branch of reduced diameter, and the studs which hold the cover are made of a material loaded up to the utmost permissible limit, and of especially great strength. The studs will be closely spaced, in each case, so that special wrenches must be used to tighten the nuts, and these are generally made smaller in size than standard. Apart from this, trouble and leaky spots are liable to arise from the rates of expansion being unequal. An improved patented high-pressure cover is claimed to prevent these troubles. A cover plate is pressed against a packing ring of conical section by the pressure prevailing in the interior of the vessel.

As this packing ring is made of material having a high modulus of elasticity, it is not stressed beyond the elastic limit and, after dismantling, it does not take a permanent set or show any deformation. A split retaining ring, which rests against a turned recess in the vessel, takes up the axial component of the pressure on the packing ring. For keeping the parts in their proper position, a ring nut or an assembly ring is used, and the parts are under no load from the working pressure.

This improved type of cover has been used up to diameters of  $3\frac{1}{2}$  ft., and working pressures of 2,800 lb. p.s.i., and the advantages over conventional bolted-on covers are considerable. These are permanent tightness even under fluctuating working-pressure, and convenient assembly and dismantling due to the absence of a large number of nuts and studs, the absence of which latter alone makes for considerably reduced cost.<sup>10</sup>

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## Extension of Cable Life

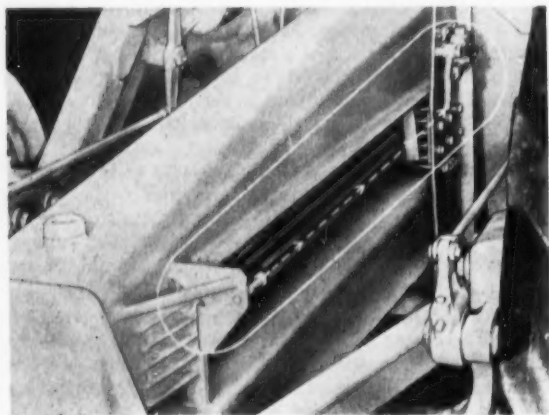
The following article discusses the care and maintenance of scraper cables and mentions in brief outline some of the devices which currently are manufactured in an effort to reduce wear to the minimum. The article was prepared with particular reference to United Kingdom conditions by M. W. Dargel, assistant manager of the Service Department, Caterpillar Tractor Co., United States.

Cable breakages during earthmoving operations can waste a great deal of time and involve considerable expenditure. In scrapers or cable-operated bulldozers the cable is the unit which is considered expendable, but the long and usable life built into a cable can only be obtained by good maintenance and by the correct use of the control unit.

The first place to check for cable wear is at the cable drum. Here the cable overlaps as it wraps around the drum, causing a wiping action. This wiping action, in turn, causes fraying.

If the cable is found to be kinked during the daily routine of inspection, the kink can often be straightened out before too much damage has been caused. Kinking is, of course, caused by improper use of the cable control which, in most cases, can be attributed to faulty adjustment of the cable control clutch and brake. Incorrect adjustment will allow excess cable to unwind from the drum.

Frayed cable is often the result of a bent or misaligned sheave, or a sheave or ejector roller that is binding or not turning freely. Sheaves and rollers require lubrication to keep them rotating freely so that the cable does not slide on the sheave.



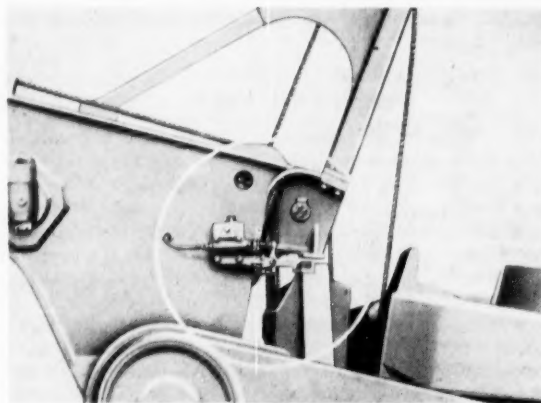
The Bowl Master cylinder

After installing new cable on a scraper, it is essential that there is approximately two wraps of ejector-apron cable on the cable control drum when the scraper ejector is at the extreme rear position, with the apron down. Also, with the bowl at ground level there should be five to six wraps of cable on the drum.

Where a drum is used to control a bulldozer, there should be sufficient cable for at least four wraps around the drum when the blade is at ground level. When lowering the scraper bowl to the ground or when setting the cutting edge for digging, the action should be positive keeping the cable under tension all the time.

The ejector will normally move the material out of the scraper rapidly. It is not advisable, however, to overstress the cable when moving sticky gumbo material. It is normal for some dirt to hang up on the cutting edge when unloading the scraper. After unloading the scraper, the ejector should be returned, again keeping the cable under tension.

As the apron is forced upward by the bulldozing action



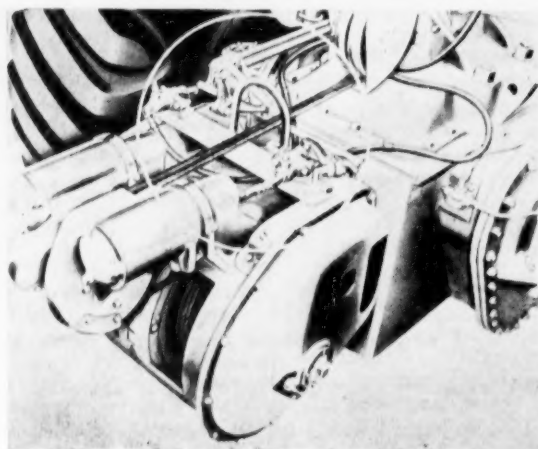
The Ejector Master cylinder

of the dirt when the bowl is being filled, any slack in the cable should first be taken up and then let out to adjust the position of the apron. The cable control brake should be engaged while moving to the dumping area, and the cut.

To aid the operator in extending the life of cable, a cable saver has been made available on some scraper units. Basically, the cable saver consists of a master cylinder and a slave cylinder, connected hydraulically. The master cylinder for the ejector cable is located at the forward end of the ejector track and the master cylinder for the bowl lift cable is located on the goose-neck near the upper nest of bow lift sheaves. Both slave cylinders are located on top of the cable control housing.

As the ejector and bowl approach their limit of travel, and before contacting the stops, the master cylinder is tripped and actuates the slave cylinder which forces the cable control lever to the hold position. Thus movement of the ejector and bowl is stopped before they reach their limit of travel and the cable is not overstressed.

Cable savers are highly recommended for scrapers in the field as an aid to operation and as an extender of cable life.



The Slave cylinders



## MACHINERY AND EQUIPMENT

### A New Type Drainage Pump

Recently delivered to the Luossavaara-Kirunavaara Mines at Kiruna, Arctic Sweden, for use in the new underground shafts there, have been large numbers of new type electrical immersion pumps manufactured by AB Flygt Pumpar, of Stockholm.

Requiring no attention whatever between monthly check-ups, the pumps are placed on to the bottom of the shaft, the flexible hose connected up and the electric current switched on. It is then unnecessary to touch the pump any further.

The pumps can still be left running without attention and even 24 hours a day continuous running do not affect the pump.

Consisting of a centrifugal pump with vertical shaft and a strainer in the bottom, the pump unit is powered by a water-tight, built in, three-phase, 50 cycle AC electric motor which runs in air. Between the pump and the motor there is an oil-lock with double mechanical seals. The water from the pump cools the motor casing as it passes through to the discharge hose. The shaft is journaled on ball bearings and the normal packing box is replaced by two self-lubricating seals.

Since the strainer and impeller are at its base the new pump will take the water if there is an inch or more of depth. There is, therefore, no trouble with heavy suction hoses or foot valves and installation costs are eliminated. A high percentage of solids can be dealt with. The pumps are approved by the Belgian and Dutch authorities for use in coal mines and their design meets the requirements of the Flameproof Rules and Regulations in England.

The new Flygt pump range includes the model B-38 weighing 70 lb. with an h.p. of 1.5 and operating at 10 g.p.m. at 60 ft. and 40 g.p.m. at 20 ft.; the B-80L, weighing 185 lb., 5 h.p., operating at 50 g.p.m. at 90 ft. and 200 g.p.m. at 20 ft.; and the B-80 marine model, weighing 140 lb., 5 h.p., and operating at 50 g.p.m. at 90 ft. and 200 g.p.m. at 20 ft. Specially designed for use in confined spaces are the models B-150 and B-200. The diameter of these units is 9 in. Each model weighs 1,250 lb. and has 56 h.p., the B-150 operating at 400 g.p.m. at 140 ft. and the B-200 at 1,500 g.p.m. at 65 ft.

For normal working the site around the digging operations is usually drained by B-38 pumps, which feed the water to one or more larger B-80L or B-80 marine.

The B-80 pumps take the water away from the site, or, if

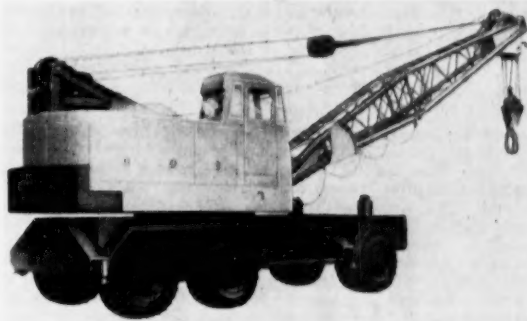


A B-80 Flygt pump in operation

the head is very large, they pass it over to one or more B-150/200 crane-handled pumps. No pump operators are required and the whole system is very flexible. If need be, to obtain higher lifts, two or more pumps can be coupled in series to increase the head. The British representatives for these pumps are Midland Tunnelling Co. Ltd.

### A New Range of Mobile Cranes

Incorporating several new features and designed to lift a load of 25 tons, at 10 ft. radius, are three newcomers to the Coles range of mobile cranes, built by Steels Engineering Products Ltd. Flexibility of operation is an important feature of all Coles cranes.



The Coles S2710 self-propelled mobile crane

The new cranes are a self-propelled, a lorry-mounted, and a rail version of a model known as the 2710; the letters "S", "L" and "R" respectively identifying the cranes. A 30 ft. strut jib of lattice construction is fitted to all the cranes, and this can be extended to a maximum of 80 ft.

The S.2710, or self-propelled model, offers a choice of power units. They are a Ford petrol engine, giving 64 h.p. at 2,200 r.p.m., or a Perkins diesel engine (65 h.p. at 2,200 r.p.m.). The power unit drives a specially designed variable voltage generator which in turn powers the hoist, derrick and slew and travel motors. Automatic reversing mechanism on the steering gear is an important Coles feature on this crane. The L.2710 is mounted on a Coles 6 x 4 crane carrier chassis. An A.E.C. diesel engine is used for travelling and gives a maximum road speed of 27.3 m.p.h. Power assisted steering is a standard feature, and air pressure foot-operated brakes are fitted on all wheels. On the crane itself there is a Perkins diesel engine driving the generator which powers the hoist, derrick and slew motors.

The third of the new models, the R.2710 offers the same choice of power units as the self-propelled crane—the Perkins diesel or the Ford petrol (64 h.p. at 2,200 r.p.m.).

### Resistant Leather for Industrial Use

The Gatan industrial leather manufactured by George Angus & Co. Ltd., is presented as having a marked resistance to oil and extremes of temperature, while simultaneously it resists many organic liquids, solvents and other chemicals. Gatan is a combination tannage which, at higher temperatures up to 150 deg. C. remains soft and supple, although slight shrinkage of up to 5 per cent may occur, depending on temperature. At sub-zero temperatures the material may be used as long as the oil remains liquid. In air, flexibility remains unaffected throughout a temperature range of -80 deg. C. to +150 deg. C. and by using a special impregnant the upper limit of this range may be raised to +210 deg. C.

It is understood that one of the more promising applications of Gatan industrial leather is its use in covers for mining machinery.

## METALS, MINERALS AND ALLOYS

**COPPER.**—Copper has gone right back to its highest levels in the United States with dealers getting 50 c. per lb. for December metal, although the amounts involved are small and probably circulating among speculators. Custom smelters have been selling copper at 48 c. for any period during the first quarter of 1956. The situation has, in fact, now pretty well settled down and there is much less speculation about copper prices in the short term. Whatever price may be paid for 1955 metal (and the level could easily go a lot higher yet while those with depleted inventories seek to fill them up to lower their tax assessments), bidding is for a very small volume of available supply and therefore not of great significance. Further, since these expensive parcels are not wanted for consumption the effect of cutting off inventory buying at the end of the year will probably not be very great.

What really matters is the price now being paid for next quarter's copper and that seems to be established at 46 to 48 c. from the custom smelters and 43 c. from the big producers. No. 2 wire scrap is now selling at 40 c., which is equivalent to about 45½ c. for refined metal in three months' time. In other words the expectation of a lower general price level has, by common consent, now receded till April when it is supposed that fresh supplies will be available.

A strike would, of course, alter this picture—just as the strike in the Copperbelt altered a very similar picture exactly a year ago. In Chile the strike at the Chagres mine ended on December 1 after an agreement to raise wages had been reached. The strike at the three big American-owned plants, which was to have started on December 4, has been put off to allow negotiations to continue on a new copper mining labour statute. It is not at all clear precisely what the union is after, although the general tenor of their intentions is obvious. As was pointed out in a Note and Comment on December 2 the copper companies have been largely insulated from Chilean inflation by being granted an exchange rate which will approximate to the free rate for the peso. The union is now attempting to "defend the workers' rights to share in the extra profits which companies are making under the new deal for the mining and taxation of copper." If the workers are to get an increase in pay every time the companies secure an adjustment of their exchange rate then the chance of ever controlling inflation is very slight. On the other hand the union is unlikely to acquiesce in anything less without a strike.

Both in the short and in the long term the Chilean outlook is black. The government is likely to yield more than would be wise simply to maintain copper output at its present profitable rate and it may be encouraged to do this by the fact that the free exchange rate is now well in excess of the rate of 300 pesos to the dollar that the companies are now receiving; it is now in fact hovering around 500. Meanwhile Chilean copper production for the first 11 months of this year totalled 364,818 tonnes, against 287,952 tonnes in the corresponding period a year ago.

From Rhodesia it is reported that the Chamber of Mines has agreed to go to arbitration with the demand for 6s. 8d. a shift put in by the African Mineworkers Union. It is also announced that the Chamber has agreed to recognize the African Staff Association as the bargaining union on terms and conditions of employment, including wages, for Africans in supervisory and staff positions. The Association will not be able to bargain on behalf of policemen or forest guards.

**LEAD.**—Lead has continued firm in New York on the basis of 15½ c. per lb. The feeling remained that London would have to show a further increase before a further rise was justified, but as London is now within a few shillings of the critical £112 a rise may be imminent. Speculation on the possibility of an advance has governed trading in the past week. Lead sales in successive weeks have been 18,500 tons and 6,819 tons; the figure in the latter week reflecting a loss of assurance that a price rise was imminent, and also a reluctance on the part of sellers to deal on a current price basis instead of the usual average of the month basis. More recently, the resistance has weakened and deals have been made on both bases. Selling on the current price is the traditional forerunner of a price increase since it implies that the buyers are expecting one and that assists the sellers to enforce it.

In October smelters' receipts of lead in ore and scrap in the United States were the highest for six years at 56,573 tons; the main cause of the high figure was a sharp increase in the total of imports of lead in ore which rose about 6,000 tons.

**TIN.**—Tin has showed fresh strength in the past week in London, New York and Singapore. In the Eastern market the

highest price was reached last week since April, 1953; in London tin reached £810 a ton; in New York spot metal, which only a month ago was 96½ c., went up to 103.75 c. when London was at its peak and then advanced to 104.50 c. per lb. (although London had fallen back about £6 15s.) and it continued to rise to 105.37 c. The main reason for this remarkable show of strength was the persistence of demand in the United States. It is probable that the limit of the rise has not yet been reached for, in addition to the other bullish factors, there is the fact that the Pulau Brani smelter is shortly to close for stocktaking and overhaul. It will be closed for a fortnight. An actual shortage of metal in New York is feared as a consequence in January.

The strength of current American demand must be taken as continuing for as far ahead as can be foreseen. But most of the other factors that are contributing to the present bullishness are subject to change. Mr. Krushchev and Marshal Bulganin have now entered the last stage of their Asian tour and will soon re-ire to Russia; Mr. Marshall, who has felt it necessary to prepare for his visit to London with a series of threatening remarks will shortly be here and will have to start serious negotiation. The situation in the Middle East is no better but time is on the side of a settlement. Finally, the professed Indonesian intention of ratifying the International Tin Agreement before the end of the year must soon be put to the test; it is in fact rumoured that a decision has already been put off. In other words a number of uncertainties should soon clear up.

It is now more than ever necessary for the I.T.A. to be ratified quickly, for there is the danger that tin prices will become extremely volatile if American stockpiling is suddenly stopped. At the moment the continuing working of the Texas smelter is creating a commercial shortage but demand is not growing fast enough to take care of the 23,000 tons that the stockpile is taking off the market. The period of high prices that seems to lie ahead may be followed by a sharp fall if there is no I.T.A. to start acquiring metal. Sudden swings in the value of tin have done much harm to it in the past.

**ZINC.**—Zinc has been a strong market in the United States on the basis of 13 c. per lb. East St. Louis for prime western grade. As in the case of lead there has been much speculation on the chance of a further rise and this has influenced trading. Sales have been made on both a current and a monthly average basis in the past week. Traders have watched the recent strength of the London market and are apparently ready to take their cue from it. Meanwhile commercial demand for all grades of the metal is extremely good and the shortage of special high grade has remained as acute as ever, although at the beginning of the month all producers fell into line with the 1½ c. premium.

**ALUMINIUM.**—A decision may be taken soon on plans for starting an aluminium industry in Surinam, which would almost completely alter the economy of this territory. Schemes under consideration envisage a hydro-electric station with an annual output of some 1,000,000,000 kW. The project involves the construction of an earthen dam on the Surinam river near Brokopondo and the total cost is estimated at £16-£17,000,000. The power available for an aluminium plant would be sufficient for an output of 40,000 tons of metal a year. According to the *Financial Times* negotiations for the construction of the plant are in progress with Alcoa, Kennecott Copper and Reynolds Metal. Still more ambitious plans are reported to be under consideration one of which envisages the construction of further hydro-electric units in a tributary of the Tapanahony river. The combined Brokopondo and Tapanahony undertakings could make sufficient power available for an aluminium plant with an annual output of 140,000 tons.

**GERMANIUM.**—The Société Générale Métallurgique de Hoboken has announced that it is building a new plant for the production of germanium, which will be one of the most important in the world. Production figures cannot be disclosed. It may be recalled that in its report on the year 1954, Union Minière stated that S.G.M. de H. had produced for its account 1,095 kg. of germanium oxide from dust recovered from gases of the Lubumbashi water jacket furnaces. Arrangements have been made to develop the production of germanium oxide and germanium metal, which at present is limited. Operations were started in January, 1955, on a small plant at Kolwezi, Upper Katanga, for the recovery and treatment of the lead, cadmium and germanium contained in the dust from the Union Minière water jacket furnaces. Among other products it produces a germanium deposit which is shipped to the works of S.G.M. de H. at Olen, in Belgium, for the preparation

of a commercial product. In its report for the year ended June 30, 1955, S.G.M. de H. refers to the successful production of "electronically" pure germanium oxide at the Olen Works. Research on germanium metal is being undertaken.

**MAGNESIUM.**—Comparative tables compiled by the U.S. Bureau of Mines indicate that the consumption of magnesium base scrap in the U.S. declined from 12,000 s.tons in 1953 to 8,000 tons last year, a fall of 31 per cent. Primary consumption fell by 12 per cent from 47,000 tons in 1953 to 42,000 tons last year. The reduced scrap consumption during 1954 is ascribed largely to the general availability of primary magnesium ingot suitable for casting purposes.

**MANGANESE.**—The South African Railways Administration have advised South African producers that no real improvement can be expected in shipments of manganese until the end of 1957. Yet Mr. R. Dyason, chairman of South African Manganese, states in his annual review that no difficulties were experienced in obtaining sufficient shipping space to load all the ore railed for supply to overseas buyers.

**NICKEL.**—Reports from the U.S. state that the continued tightness of nickel threatens to curtail the production of electronic equipment and has led to allegations that the plating industry is obliged to purchase much of its requirements at "grey market prices".

Meanwhile the B.D.S.A. announced recently that it was investigating all orders for November deliveries placed under the defence materials system. The investigation is being made at the request of the O.D.M. which, during this year, will have diverted some 12,000 s.tons of nickel from stockpile delivery, and it would seem to suggest that some users may have been abusing the defence priority rating system in order to ease their supply difficulties.

**LITHIUM.**—The production of lithium carbonate by a patented process is to be undertaken at Brussels in a pilot plant erected to try out a process already successfully tested in the laboratories. The first trials were conclusive, states the annual report of Geomines, and consequently the plant is to undertake continuous production at capacity. At some future date Geomines will carry out investigations preparatory to production of lithium carbonate on a commercial scale. The works will be built at Manono, Katanga, where the company's tinfields are situated, and will use spodumene derived as a by-product from the crushing plants.

**SILVER.**—After remaining a quiet market throughout most of the month, with the New York price remaining unchanged at 91.62 c., silver fell to 91 c. on November 28 with a further fall to 90 c. the following day. In London the cash price fell in sympathy with New York, declining in stages to 77½d.-77¼d. on November 30. December opened with a slight recovery in price, which was not fully sustained. Since October 12 the cash price of silver has fallen on balance by 2½d. from its then 35-year peak to 77¼d. per oz. This situation is attributed to the seasonal decline in the demand for silver, plus the fact that producers were unwilling to accumulate metal at the higher level. Silverware manufacturers have cut down operations due to the fact that distributors are now fully supplied with wares for the Christmas season. Industrial demand always tends to fall off during the closing weeks of the year, but this year the decline has been more marked than usual because of the recent high prices, which have discouraged consumption. Some factors in the trade believe that the market may continue to show narrow fluctuations, indicating that supply and demand are fairly well in balance. In assessing the future outlook, however, account must be taken of a probable decline in new production during the current year. World production in the whole of 1955 may not have been more than the 216,000,000 oz. produced in 1953, compared with about 220,000,000 oz. in 1954.

## The London Metal Market

(From Our Metal Exchange Correspondent)

All markets have been active with a firm undertone as demand for all four metals continues at a high rate, especially in America where in particular the prices of copper and tin are very firm.

The main features in the copper market have been the reduction in the stocks published on Monday and the reluctance of the market to break through into higher ground in spite of good demand. In America where the lead is coming from at the moment prices for premium-copper have again increased which has enabled smelters to pay more for scrap, but it is understood that offerings of the latter are not plentiful. The fall in stocks was unexpected and must be due to fairly substantial shipments of actual metal out of this country. In Europe

demand keeps up but is becoming somewhat patchy, especially in Germany where industrialists are beginning to get worried about the over-employment which is causing labour to leave the more unpleasant jobs, amongst which must be classed work in smelters and foundries.

Tin has again been very firm, with active buying in America based on the belief that shipments of tin will be affected by the closing down of one of the smelters for annual overhaul, and also the possibility that more political trouble will develop after the turn of the year following Mr. Marshall's visit to the U.K. It is understood that the Indonesian decision on whether or not to join the International Tin Agreement has once more been postponed until the spring. On Thursday morning the Eastern price was equivalent to £823 per ton c.i.f. Europe.

Although lead has been less active than the other metals, prices have gone ahead again but there is little expectation of any substantial increase.

The zinc market has also gone forward as more and more people realize that the supply position, especially for the higher grades, is becoming more difficult, and it would not surprise anyone if the American producers make another attempt to raise the domestic price if the London market holds up for a few more days.

Closing prices and turnovers are given in the following table:—

	December 1		December 8	
	Buyers	Sellers	Buyers	Sellers
Copper				
Cash	£384	£385	£394	£395
Three months	£374	£375	£384	£384½
Settlement	£385		£395	
Week's turnover	3,600 tons		5,375 tons	
Tin				
Cash	£788	£789	£823	£824
Three months	£776	£777	£813	£814
Settlement	£789		£824	
Week's turnover	620 tons		1,105 tons	
Lead				
Current half month	£109½	£110	£112	£112½
Three months	£109½	£109½	£111	£111½
Week's turnover	3,300 tons		2,075 tons	
Zinc				
Current half month	£95	£95½	£99½	£100
Three months	£93½	£93½	£95½	£95½
Week's turnover	4,350 tons		5,175 tons	

## OTHER LONDON PRICES—DECEMBER 8

### METALS

Aluminium, 99.5%, £171 per ton	Nickel, 99.5% (home trade) £519 per ton
Antimony—	Osmium, £24/27 oz. nom.
English (99%) delivered, 10 cwt. and over £210 per ton	Osmiridium, £40 oz. nom.
Crude (70%) £200 per ton	Palladium, £7 10s./£8 0s. oz.
Ore (60% basis) 23s. 6d./24s. 6d. nom. per unit, c.i.f.	Platinum U.K. and Empire Refined £32 10s. oz. Imported
Bismuth (min. 1 ton lots) 16s. lb. nom.	Rhodium, £40.
Cadmium 11s. 6d. lb.	Ruthenium, £17 oz.
Chromium, 6s. 11d./7s. 4d. lb.	Quicksilver, £89 10s./£90 0s. ex-warehouse
Cobalt, 21s. lb.	Selenium, 72s. nom. per lb.
Gold, 249s. 8½d.	Silver, 77½d. f.o.z. spot and 77¼d. f.d.
Iridium, £30 oz. nom.	Tellurium, 15s./16s. lb.
Manganese Metal (96%-98%) £269 according to quantity	
Magnesium, 2s. 4d. lb.	

### ORES, ALLOYS, ETC.

Bismuth .. .. .	30% 5s. 0d. c.i.f.
Chrome Ore—	20% 3s. 3d. lb. c.i.f.
Rhodesian Metallurgical (semi-friable) 48%	£15 2s. 6d. per ton c.i.f.
Refractory 45%	£14 2s. 6d. per ton c.i.f.
Smalls 42%	£12 2s. 6d. per ton c.i.f.
Magnesite, ground calcined	£26-£27 d/d
Magnesite, Raw	£10-£11 d/d
Molybdenite (85% basis)	105s. 0d.-108s. 0d. per unit c.i.f.
Wolfram and Scheelite (65%)	257s. 6d./262s. 6d. c.i.f.
Tungsten Metal Powder (98% Min. W.)	20s. 1d. nom. per lb. (home)
Ferro-tungsten (80%-85%)	17s. 1d. nom. per lb. (home)
Carbide, 4-cwt. lots	£39 3s. 9d. d/d per ton
Ferro-manganese, home	£54 10s. 0d. per ton
Manganese Ore Indian c.i.f.	
Europe (46%-48%) basis 110s. freight	84d. per unit c.i.f.
Manganese Ore (38%-40%)	69d. per unit
Brass Wire	3s. 6½d. per lb. basis
Brass Tubes, solid drawn	2s. 11½d. per lb. basis



## THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Trading conditions in South African mining markets during the past week were quiet. Finance houses generally recorded little change. Interest was at a low ebb but prices were generally steadier. A feature was the sharp rise in Union Corporation due to hopes of development in the New Kinross area. It is thought that as many as five mines may eventually be established here. Prospecting continues.

The November Rand returns show, as expected, lower working profits for most of the older properties. The lower price for gold and the recent increase in wages showed themselves in the results. Despite this fact, prices were fairly steady and there were one or two good features. Dominion Reefs were harder being still under the influence of the coming interim dividend. The good results from Hartebeestfontein and the prospect of uranium production by 1957 were well received. Consideration of the value of shareholdings held by New Pioneer, estimated to be about 22s. a share, caused a rise in this issue. Randfontein were also better on hopes of increased distribution. On the other side of the picture, City Deep fell, due to the low profit figure caused by a winding mishap and a shaft fracture. It is understood that the coal measures being explored at Springs are not owned by the mine itself.

In the Orange Free State market, the overall trend was also better. There was an improvement in Freddie Consolidated on unconfirmed rumours emanating from Johannesburg that better results were being obtained. Free State Geduld, the bellwether of this particular group, hardened. Anglo American Corporation are lending the mine another £1,000,000 and initial results are expected in January. These are not expected to be outstanding but a gradual improvement is looked for. Should there be any sudden jump in the shares, it is thought that this is more likely to stem from drilling results than initial production. There have been strong rumours in the market that interested finance houses have established a peg for the share price. Good figures from President Brand and Western Holdings left these issues unchanged over the week.

The continuing native labour strike in West Africa affected

the leading issues in this field and prices were marked down.

In the West Australian group, Sons of Gwalia have obtained further loan accommodation guaranteed by the State Government with the object of continuing their development programme. Caving in the mine between the second and third level may cause some loss of production.

Diamond shares continued a firm market, consideration being given to the strong position of the companies mentioned last week.

Coppers were a feature with all round gains. The firm metal price led to continued continental interest and the increased interim dividend by Selection Trust on the bigger capital was well received. Tanganyika Concessions were also a good market on break up considerations, one estimate puts it about £12 a share. The outstanding feature was the sharp gain in Rhodesia Katanga. Once again rumours have been prevalent that a metallurgical treatment for dealing with oxidized ore has been discovered. In addition, the name of Rio Tinto has been linked with the possible exploration of the company's large areas hitherto only sketchily examined.

Tin shares were active. The sharp rise in the metal price due to American buying and the higher world consumption of tin were the root causes. Mines such as Gopeng, Kamunting and Sungei Kinta which have substantial ore reserves led the way.

There was also renewed enquiry for the Nigerian issues although Jantar which is now principally a columbite producer continued to fall away. Geevor, the Cornish tin mine, reached its highest level since 1952.

Lead/zinc shares failed to respond to the firm metal prices. Barriers being influenced by the coming Australian elections. There was, however, speculative activity in Trepsa after attention has been drawn to the company's right to participate as to 20 per cent in any fresh undertakes of Selection Trust and also to the interest in Bikita Minerals. The shares touched 6s. before re-acting.

Purchase	Price Dec. 7	+ or - on week	Rand Gold contd.	Price Dec. 7	+ or - on week	Diamonds and Platinum	Price Dec. 7	+ or - on week	Tin (Nigerian and Miscellaneous) contd.	Price Dec. 7	+ or - on week
African & European	3		W. Rand Consolidated	38/14					Gold & Base Metal	1/104	
Anglo-American Corp.	84	-6	Western Reefs	34/6		Anglo American Inv.	9 1/2	+ 1/2	Jantar Nigeria	6/-	-9d
Anglo-French	22/9					Castles	27/6		Jos Tin Area	15/-	
Anglo-Transvaal Corp.	27/6		O.F.S. Gold			Cons. Diam. of S.W.A.	7 1/2		Kaduna Prospectors	2/-	
Central Mining (E.I. shrs)	42/3		Freddies	8/-	+ 1 1/4d	De Beers Defd. Bearer	6 1/2	+ 1/4	Lake George	14/7 1/2	
Consolidated Goldfields	56/10 1/2	+ 7 1/2d	Freddies Consolidated	4/6	+ 7 1/2d	De Beers Pfd. Bearer	16 1/2		Mount Isa	61/3xd	-9d
Consol. Mines Selection	38/14	+ 7 1/2d	F.S. Geduld	3 1/2	+ 1/2	Pots Platinum	12/-	-3d	New Broken Hill	43/14xd	-1 1/2
East Rand Consols.	1/10 1/2		Geoffries	14/13	+ 1 1/2d	Watervaal	19/-	+ 6d	North Broken Hill	81/-	-1/6
General Mining	4 1/2		Harmony	27/9					Rhodesian Broken Hill	15/-	+ 9d
H.E. Prop.	7/6	-3d	Lorraine	6/-		Copper			San Francisco Mines	27/-	+ 3d
Johnnies	39/9	+ 3d	Lydensburg Estates	16/7 1/2		Bankcroft	40/-	+ 2/3	Sunwura	6/9	+ 9d
Rand Mines	34		Merriespruit	10/4 1/2	+ 1 1/2d	Chartered	74/-	-1/-			
Rand Selection	40/14	-1/3	Middle Wits	13/3	+ 1/2	Esperanza	4/3	+ 3d	Broken Hill South	56/3	-7 1/2d
Union Corporation	47/-	+ 1/6	Osifis	57/6	-1/3	Lake George	8 1/2	+ 1/2	Burma Corporation	14/7 1/2	-3d
Vereeniging Estates	4 1/2		President Brand	63/9		Nchanga	14 1/2	+ 1/2	Consol. Zinc	55/6d	-9d
Wits	37/9	+ 3d	President Steyn	25/-	+ 3d	Rhod.-Anglo-American	5 1/2	+ 1/2	Lake George	21/3	-9d
West Wits	39/9		St. Helena	37/-	+ 3d	Rhod.-Katanga	33/-	+ 5/6	Mount Isa	61/3xd	-9d
			Virginia Ord.	10/10 1/2	-1 1/2d	Rhodesian Selection	47/-	+ 1/6	New Broken Hill	43/14xd	-1 1/2
			Welkom	17/-		Rhokana	42 1/2	+ 1 1/2	North Broken Hill	81/-	-1/6
			Western Holdings	3 1/2	+ 1/2	Rio Tinto	3 1/2	+ 1/2	Rhodesian Broken Hill	15/-	+ 9d
						Rion Antelope	25/3	+ 7 1/2d	San Francisco Mines	27/-	+ 3d
						Selection Trust	4 1/2	+ 1 1/2d	Sunwura	6/9	+ 9d
						Tanka	84xd	+ 1 1/2			
						Tharsis Sulphur Br.	6 1/2	+ 1 1/2	Miscellaneous		
									Base Metals and Coa		
									Amal. Collieries of S.A.	50/9xd	-1/-
									Associated Manganese	35/7 1/2	-1 1/2
									Cape Asbestos	10/4 1/2	+ 1 1/2d
									C.P. Manganese	32/6	
									Consol. Murchison	68/1 1/2	+ 1/3
									Natal Navigation	11/6	
									Turner & Newall	19/-	+ 6/6
									Wankie	19/-	+ 4 1/2d
									Whitbank Colliery	5 1/2	
									Canadian Mines		
									Dome	\$29	
									Hollinger	\$35xd	+ 1 1/2
									Hudson Bay Mining	\$14 1/2	+ 4 1/2
									International Nickel	\$143 1/2	
									Mining Corp. of Canada	£78	
									Noranda	\$95 1/2	+ 2 1/2
									Quemont	£94	+ 2 1/2
									Yukon	4/14	
									Oil		
									Anglo-Italian	5 1/2	+ 1/2
									Apex	35/-	
									Attick	42/6	+ 3/6
									Burmah	34	+ 1/2
									Canadian Eagle	54	+ 2 1/2
									Mexican Eagle	24/3	+ 3d
									Shell	34	+ 1/2
									Trinidad Leasehold	42/-	+ 1/4
									T.P.M.	27/6	
									U.L.D.	37/-	+ 2/9



## COMPANY NEWS AND VIEWS

### Rand and O.F.S. Returns for November

Working profits of Rand and O.F.S. producing gold mines showed many declines during November. Factors responsible for this were a lower price received for gold at 249s. per oz. as compared with 250s.; recent wage awards to European miners effective from November 1, and lower tonnages milled due to the seasonal decline in native labour supplies.

Most outstanding amongst the returns was that from Hartbeestfontein which during its fifth month of operations made £120,011. The grade recovered at this property advanced to 9.16 dwt. per ton from only 6.7 dwt. during July—its maiden operating month. A 2,000 ton rise in milling rate lowered President Brand's working costs by 11d. per ton but the grade remained static at 16 dwt. Other O.F.S. mines to increase their mill throughputs against the general trend were President Seyn and Welkom which both put on 2,000 tons, while at Western Holdings crushing improved by 3,000 tons. The interesting announcement was made that Free State Geduld Mines would start production during January, 1956, at the end of which month the first return will be made.

### Rand Dividend Season Opens

The Anglo American Corporation of South Africa has opened the Rand dividend season. While all payments except Western Reefs exceed those of last June, Springs' more than doubled distribution provides a point of particular interest. This sharp increase, it is stated, has been due to enhanced profits from sales of surplus plant and buildings.

Company	June 1954	Dec. 1954	June 1955	Dec. 1955
Anglo American	s. d.	s. d.	s. d.	s. d.
Brakpan	4½	6	4½	7½
Dagga	3 0	3 0	2 9	3 0
E. Dagga	9	9	9	10½
S.A. Lands	1 3	1 6	1 4½	1 6
Springs	Nil	2½	Nil	5½
W. Reefs	1 3	1 3	1 3	1 3

### Chairman of West Wits on the Gold Price

Referring to Mr. R. A. Butler's recent public approval of the South African Government proposal for a rise in the price of gold, Mr. P. S. Hammond, chairman of West Witwatersrand Areas, in his statement to shareholders, particularly mentioned the qualification made regarding the timing of such an adjustment. He also anticipated that the monetary authorities of other countries would wish to be sure that this event did not provide the signal for further inflation.

It was, continued Mr. Hammond, becoming clearer that in order to return to sound currencies there was both a need for stopping inflation and for raising the gold price. South Africa's case for a higher price had steadily won converts throughout the world.

### Anglo American Increases Loan Facilities to F.S. Geduld

The Anglo American Corporation of South Africa has agreed to increase loan facilities held at the disposal of Free State Geduld Mines from £3,500,500 to £4,500,000. All amounts drawn on the total will bear interest at six per cent per annum; a charge of one per cent per annum being made on the uncalled balance.

In consideration for this accommodation Free State Geduld has undertaken that, in the event of further capital being raised, Anglo American would have the right to subscribe for £1,000,000 of the amount raised on the same terms and conditions as offered to shareholders.

### Value of Tanks' Union Minière Holding

Consolidated balance sheet figures as at July 31, 1955, for Tanganyika Concessions showed the value of 179,760 Union Minière du Haut Katanga parts sociales at £4,338,513 remaining thereby unchanged from that of the previous year. An enormous increase took place, however, in the market valuation of this holding which rose to £85,386,000 from £51,616,800. The company's other main investment represented by 90 per cent of the Benguela Railway Company's equity capital and all its debentures was valued at £4,733,990 (£2,742,770). Current assets exceeded current liabilities including reserve for taxation by £1,041,239.

During the past financial year Tank's total group revenue amounted by £3,253,207 as against £2,718,575. Of this sum dividends from Union Minière made up £2,059,534 (£1,859,726) while receipts from the Benguela Railway accounted for £582,298 (£211,697). Another important item of income was mining royalties which after deduction of Belgian tax provided £536,735 (£527,073). Dividends absorbed £2,829,558 as compared with £2,254,846 and profits unappropriated moved up to £1,903,290 from £1,383,544. At their present price of about £8 8s. 4d. Tanganyika Concessions 10s. ordinary stock units yield about 4.1 per cent. Sir Ulick Alexander is chairman. Meeting, Salisbury, Southern Rhodesia, January 5.

### Union Minière Maintains Dividend

A *Reuter* report has disclosed that Union Minière du Haut Katanga will maintain its interim dividend of 600 Congo francs net per share and 60 francs per one-tenth share. Payment will be effective as from January 3, 1956.

### Selection Trust Pays 17½ Per Cent on Increased Capital

An interim dividend of 17½ per cent on Selection Trust's issued ordinary stock, recently increased to £2,354,519 in units of 10s., has been declared in respect of the year ending March 31, 1956. The previous year's interim of 15 per cent was paid on a capital of £2,242,399. During the past financial year ended March 31, 1955, dividends totalled 50 per cent on the old capital. This compared with 42½ per cent during the preceding year.

### Good Development Values at Magundi

The statement to shareholders by Mr. W. A. E. Winterton, chairman of Magundi Copper Mines and Minerals, revealed some interesting information regarding prospecting work being carried out in the Northern Rhodesian concession belonging to North Charterland Exploration (1937).

Particularly good assay results have been obtained in the Mynezi area and seven outcrop samples of reef over a strike length of 3,000 feet with a width of 15 to 50 ft. assayed 12.69 per cent copper. Four samples over a strike length of 2,000 ft. with a width of 1 to 2 ft. assayed 7.01 per cent copper; while two samples along a strike of 300 ft. with a width of 5 ft. assayed 16.25 per cent copper. These three occurrences represented a continuous strike of 8,700 ft.

Mr. Winterton said that although these surface samplings were of oxide ore, indications of sulphide ore were present in dump material from old shaft sinkings. At the earliest opportunity these shafts would be de-watered for inspection after which drilling would be considered to investigate the possibility of sulphide ore at depth.

Meeting, Salisbury, Southern Rhodesia, December 28.

### Good Results from Geita

At the recent meeting of Kentan Gold Areas which owns about 79 per cent of Geita Gold Mining Company, the chairman, Lord Grey, expressed his confidence that the steady progress of the past financial year would be maintained. So far, he said, during the first four months of the current year a tonnage of 91,400 l.tons had been milled yielding 2,991 dwt. of gold per ton for a working profit of £17,872. During the corresponding period of the previous year mill throughput was 88,300 l.tons yielding 3,097 dwt. per ton for a working profit of £14,413.

Lord Grey also stated that deep development at Geita continued to show good results. At Prospect "30" there was evidence that payable extensions of the orebody would be found. Moreover, work on the North East Extension was proceeding rapidly and while further development was necessary before reporting payable footage, exposures had revealed a considerably higher than average grade. It was hoped that more definite information would be available in the current quarter.

Regarding ore reserves, Lord Grey said that the present tonnage was now adequate to support an increase in output. Any substantial rise in productivity, would, however, be dependent on a complete rehabilitation of the mechanical engineering side together with the supply of an adequate labour force.

### Mawchi to Start Production Next Year

The director's report of the Mawchi Mines published with the company's report and accounts for the year ended March 31, 1955, has stated that mining and milling will commence early in 1956. At first, production must necessarily be on a small scale but will be increased *pro rata* to the influx of additional labour. Production up to the present time has been limited to tribute output and during the past year this totalled 90 tons of concentrates. A further 66 tons were produced during the first six months of the company's current financial year.

### Sharp Rise in Lampa's Net Profits

A sharp rise in net profits after taxation took place at the Lampa Mining Co. during the year ended June 30, 1955. After placing £24,000 (£11,000) to reserve and the payment of dividends which absorbed £8,050 (£5,775) the undistributed surplus carried forward moved up to £7,379 from £6,862.

Extracts from Mr. J. Shirley Esplen's report to shareholders will be found on page 689 of this issue.

### Pahang's Higher Profits

Although costs at The Pahang Consolidated Company increased slightly during the year ended July 31, 1955, over those of the preceding period, this disadvantage was more than offset by an increase of some £41 per ton in the price of mill tin sold.

Year to	Ore	Grade	Tin	Oxide	Develop-	Ore
July 31	Milled	Rec'd	Produced	Cost	ment	Reserves
	(tons)	(%)	(tons)	(per ton)	(ft.)	(tons)
1955	188,000	1.42	2,640	£339.5	21,324	494,046
1954	180,000	1.83	2,640	£326.7	20,915	505,955

Net profits after tax and all expenses earned by Pahang's subsidiary company, the Kuala Reman Rubber Estates whose accounts are not consolidated with those of its parent, amounted to £20,947 (£12,843). A dividend of 5 per cent (nil) absorbed £7,187 after which the balance carried forward was £17,632 (£19,535).

Year to July 31	Total Revenue	Taxa- tion £	Net Profit £	Divi- dends† £	To Reserve £	Carry Forward* £
1955	1,292,589	171,222	122,456	116,437	25,787	92,985
1954	1,191,536	147,020	98,135	90,750	33,544	86,966

\* After depreciation of £54,098 (1954 — £41,646).

† 1954/5 - 50%; 1953/4 - 40%

In his statement to shareholders, Mr. D. T. Lewis, the chairman, referred to the Federal Government's declaration last April of a "White Area" in East Pahang as being the most pleasing feature of the year. The tension under which the company's staff had been working for the past eight years had accordingly been relieved.

Crosscutting, Mr. Lewis stated, was proceeding on three new levels at the property and the position of the lodes should be reached within a few months.

At their present price of around 13s. 4d. Pahang 5s. ordinary shares yield 19 per cent.

Meeting, London, December 15.

### Good Outlook for Kamunting Tin

Recent sharp gains in the price of tin have drawn attention to issues in the Malayan tin section of the market. But while higher metal prices received during recent months should result in better dividends generally, investors would be wise to be selective.

Kamunting Tin Dredging, whose report and accounts for the year ended March 31, 1955, have recently been published, provides a good example of the technical and financial strength necessary for sound investment. During the first seven months of this company's current financial year a total of 1,067 tons of tin concentrates were produced as compared with 646½ tons during the previous corresponding period, the higher level of production being due mainly to the resumption of operations last July by the No. 2 dredge in Siam.

Reserves at this company's properties in Malaya and Siam are substantial and provide work for many years ahead. But in addition to this, the financial position is exceptionally strong. As at March 31, 1955, total assets amounted to £1,939,511. Of this sum current assets made up £1,288,766 thereby exceeding current liabilities by over £1,000,000 while the total fleet of dredges owned by the company was represented by the absurdly small balance sheet entry of £195,844.

At their present price of about 11s. Kamunting ordinary 5s. shares yield only some nine per cent. The reason for this comparatively low return is expectation of higher distribution. Mr. Jack Addinsell is chairman. (Report of meeting, see page 690.)

### Jantar's Forward Columbite Sales

In his statement to shareholders accompanying Jantar Nigeria's report and accounts in respect of the year ended September 30, 1955, Mr. C. A. P. Tarbutt, chairman and managing director, reviewed the company's columbite position. Since last year when he had warned shareholders to expect the termination of U.S. Government buying (an event which subsequently took place), sales of columbite had been very difficult. Until commercial users came back into the market in sufficient quantity no great improvement could be expected.

Jantar had, however, succeeded in selling most of its estimated output up to December, 1956, at a price depending upon circumstances ruling at the time of shipment. At present, the company was getting £875 a ton at an assay of 70 per cent. But a lower price might have to be accepted during the period of adjustment from U.S. Government to private buying.

Looking towards the company's future, Mr. Tarbutt said that despite benefits from recent mine re-equipment, low prices of tin and columbite, together with constantly rising costs, would inevitably mean less profit. Smaller dividends must, in consequence, be expected.

**I.C.I. and De Beers' Rhodesian Fertilizer Project.**—De Beers Consolidated Mines and Imperial Chemical Industries—through their joint subsidiary, Africa Explosives and Chemical Industries—are to spend over £3,000,000 on expanding their fertilizer manufacturing facilities in Rhodesia.

**Dr. Robert A. Mackay**, of Mackay and Schnellmann, has left on a visit to various West African colonies, and his partner, **Dr. G. A. Schnellmann**, has left on a visit to Jordan. Both Dr. Mackay and Dr. Schnellmann will be returning to the United Kingdom before Christmas.

### RECENT INTERIM DIVIDEND ANNOUNCEMENTS

Company	Year Ending	Dividends %	Date Payable	This Year to date %	Total Last Year %
Ampat Tin	31.12.55	17½	Dec. 30	17½	42½
Ind. Copper	31.12.55	10	Feb. 10	10	25a
Jo. Matthey	31. 3.56	3	N/A	3	9
Sel. Tst. b	31. 3.56	17½	Jan 21	17½	50

a Free of Indian Income Tax (included 10% bonus).

b Latest interim paid on increased capital.

A post of SENIOR MINE CAPTAIN, known locally as SENIOR MINE AGENT, is vacant at a copper mine in India. Basic salary starts at £1,350 per year rising to £1,400 in the third year. Three year contract with leave on full pay after 2½ years in India. With bonus, cost of living, etc., the total starting pay would be around £175-£180 per month. Provident Fund. Free furnished accommodation with fuel and light. Write, giving full particulars to Box 215, Walter Skinner Ltd., 20 Copthall Avenue, London, E.C.2.

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## KENTAN GOLD AREAS

### IMPROVED POSITION

A General Meeting of Kentan Gold Areas, Ltd., was held on November 30 at the Chartered Insurance Institute, 20 Aldermanbury, London, E.C.2.

The Rt. Hon. Earl Grey, Chairman, who presided, said: Shareholders will have noted that we have taken action with regard to two matters raised at our last meeting. In the first place we are experimenting to-day in the use of a smaller, more intimate, and slightly less expensive hall. I hope you will find this comfortable and that the experiment will be adjudged a success. Secondly, we fulfilled our promise to supply shareholders with an up-to-date detailed map showing the Geita Mine Area in its geographical setting by incorporating this in the circular issued on June 14, 1955, which gave particulars of the grant to the Geita Company of a Special Exclusive Prospecting Licence.

On April 19, 1955, Mr. G. C. Hutchinson resigned from the position of managing director to which he had been appointed on the formation of the company in 1934. The results which he, like myself, always thought capable of achievement at Geita now appear likely to be realized. It is with pleasure that we have welcomed Mr. T. W. Easby as his successor. Mr. Easby only joined the Board in December, 1953, but the improvement in the company's position is in no small measure due to his efforts combined, so far as Geita is concerned, with the invaluable advice and guidance of New Consolidated Gold Fields Ltd.

The results shown in the Report and Accounts justify the qualified satisfaction expressed in my printed review. Much remains to be done, but I feel confident that in the hands of our very able General Manager, Mr. P. F. Ransby, and his staff, under the guidance of New Consolidated Gold Fields Limited as Technical Advisers, the steady progress of the last year will be maintained. The results of the first four months of the current financial year from 1st July to 31st October, 1955, disclose that 91,400 long tons have been milled, yielding 2,991 dwt. per ton. The working profit for the period was £17,872. In the corresponding period of the previous year, 88,300 long tons were milled, yielding 3,097 dwt. per ton, with a working profit of £14,413.

### GOOD DEVELOPMENT RESULTS

Development in depth at Geita continues to show good results and at Prospect "30" there is evidence that payable extensions of the orebody will be found. Development of the North East Extension is proceeding rapidly, and while the complex geological structure of the payable zones makes further development necessary before payable footage can be reported, driving has revealed exposures of considerably higher than average grade and we hope that more definite information will be available in the current quarter.

### IMPROVED ORE RESERVES

There has been an improvement in ore reserve tonnage which is now adequate to support an increase in output. Any substantial rise in the rate of tonnage milled is, however, dependent on complete rehabilitation of the mechanical engineering side and the supply of an adequate labour force.

Operation of the reduction plant has improved and as a result residue values have shown a downward trend.

A Crossley-Premier Gas Engine coupled to a 600 K.W. alternator has been purchased locally from New Saza Mines Limited. The transport of this equipment to the mine is now being arranged, and it is hoped that it will be operating in the first half of 1956. Its arrival will provide adequate reserve power at Geita.

The revised capital expenditure programme envisages an expenditure of £87,000 in the year ending 30th June, 1956, and £44,000 in the year ending 30th June, 1957.

I now beg to move: "That the directors' report and statement of accounts for the year ended June 30, 1955, be and the same are hereby approved and adopted", and I will ask Mr. M. T. W. Easby to second the resolution.

Mr. M. T. W. Easby seconded the resolution which was carried unanimously.

The retiring director, Mr. G. C. Hutchinson, was re-elected and an amendment to the Articles of Association fixing the directors' remuneration was approved. Proposing it, the chairman said: Proxies representing 14,947,539 votes out of 20,000,000 have been received in favour of the resolution and only 102,917 against; this is, approximately, 75% of the members in favour, and 0.5% against.

The proceedings terminated with a vote of thanks to the chairman, directors and staff.

## LAMPA MINING CO., LTD.

The 49th Annual General Meeting of the Lampa Mining Company, Ltd., will be held in the Exchange Hotel, Liverpool, on December 19.

The following is an extract from the Chairman's report which was circulated with the report and accounts for the year ended June 30 last:—

As a result of two furnaces working together as much as possible, we achieved a further increase in production during the past year, the quantity of Matte produced being up by 64 tons, but the values contained in silver and copper were up by 40 tons of fine copper and 46,000 ounces of fine silver. The grade of copper in the charge increased slightly and the grade of silver improved considerably.

The Directors have recently ordered the construction of a third reverberatory furnace so that two furnaces are in continuous operation. This should still further increase our production.

### NEW PLANT

This has proved a disappointment up to date. The crux of the trouble has been the inability to produce continuously, pellets of the right size and hardness, such as were successfully produced on a small scale in the Pilot Plant. Our Consulting Engineers have this problem under continuous study, and as a result of tests they have recently made at their laboratory in Kent, they have recommended certain additions and modifications to the grinding and pelletizing machinery. The Board are acting upon their recommendations and hope that when carried out they will succeed in overcoming the pelletizing difficulties.

One feels it necessary to strike a note of caution with regard to the future of the copper market. Copper has come down appreciably from its peak and there is evidence that world production is going to increase considerably in the next few years. Therefore, it is to be supposed that we must expect a decline in the ruling quotations. There is the possibility before us that the New Plant may come into operation and add to our total production, as well as the increase of smelter output which we hope to see when the third furnace is completed. Therefore, I am hopeful that we can look forward to another favourable year.

I think the accounts largely explain themselves and you will notice that we recommend to you the payment of an increased dividend making a total for the year of 20% less tax.

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## KAMUNTING TIN DREDGING

### MR. ADDINSELL'S STATEMENT

The 42nd annual general meeting of Kamunting Tin Dredging Limited was held on December 2 at 55-61 Moorgate, London, E.C.2, Mr. Addinsell (the chairman) presiding.

The following is the Chairman's statement for the year ended March 31, 1955, which had been circulated with the report and accounts and was taken as read:

It is with the deepest regret I have to record that Mr. Farquharson died on March 18, 1955. Mr. Farquharson had been a Director since 1939 and rendered valuable service to this Company. Mr. W. M. Warren has been elected a Director in his place. He has spent many years in the tin industry in Malaya and his technical knowledge and practical experience will be invaluable and we are fortunate in securing his services.

From the Profit and Loss Account it will be seen that the gross proceeds from the sale of tin fell from £642,466 to £556,548 as compared with the previous year. This reduction of £85,918 was largely accounted for by the drop in the output from 1,377 tons in the previous year to 1,092 tons for the year under review, which, however, was offset to a certain extent by the increase in the average price realized for our tin of £706 per ton of metal against £640 per ton last year.

The Pangnga No. 2 dredge which started commercial production on July 1, 1955, is working satisfactorily and has produced to the end of October 150 tons of tin concentrates. The reconstruction of the Pangnga No. 1 dredge on the Bangtoe Area is well up to schedule and it is hoped it will be operating about the end of March next year provided no unforeseen difficulties occur.

### NET PROFIT AND DIVIDEND

The net profit for the year before taxation was £122,655 against £184,634 last year. Taxation requires £30,000 against £101,500 previously, the reduction being largely due to the tax allowances for the heavy expenditure incurred on the removal of the dredges. Under the Finance Act, 1954, investment allowances will be claimed on capital expenditure on new assets, and the taxation relief on these allowances for the expenditure during the year is estimated at £14,000 which your Directors have placed to Capital Reserve. The interim dividend already paid and the final dividend now recommended absorbs the sum of £76,070, leaving a balance to carry forward of £81,296. In the circumstances I think you will agree that these results are not unsatisfactory.

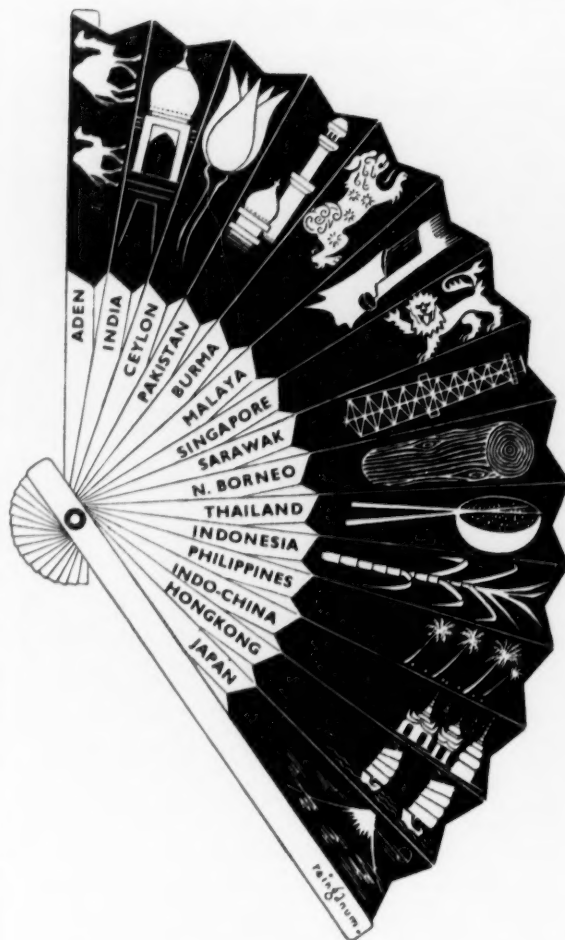
Since the close of the year an agreement with a Rubber Company has been concluded in respect of a proved tin bearing area of approximately 635 acres in the State of Perak. This will provide fresh ore reserves estimated at 11,000 tons concentrates with an approximate life of 16 years for the No. 6 dredge, which is a suitable dredge for this area and is expected to work out its present reserves sometime during 1958, and will then be removed to the new area. The area will be worked on a tribute basis, the rate of tribute being 9½ per cent. in addition to a payment of \$550 per acre as compensation for rubber trees felled. Considerable expenditure will be involved in this removal and your Directors have considered it prudent to allocate to Contingencies Reserve the sum of £85,000 resulting from adjustment of our taxation liabilities for previous years which have now been finalized.

You will see that information on the operations for the year is given in the Technical Managers' Report.

The security position in Malaya is improving but precautions against possible terrorist attacks have still to be taken and our thanks are due to the Eastern Staff and to Anglo-Oriental (Malaya) Ltd., our Managers, for the results achieved under these circumstances.

The report and accounts were unanimously adopted, the final dividend approved, and the retiring directors re-elected.

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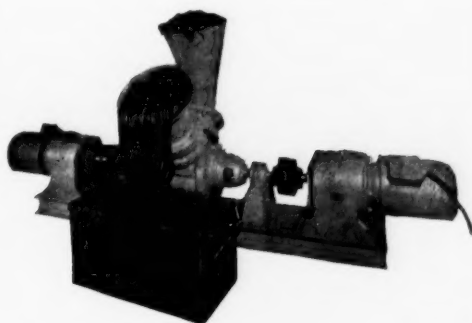
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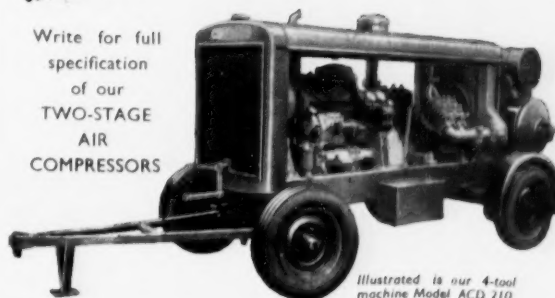
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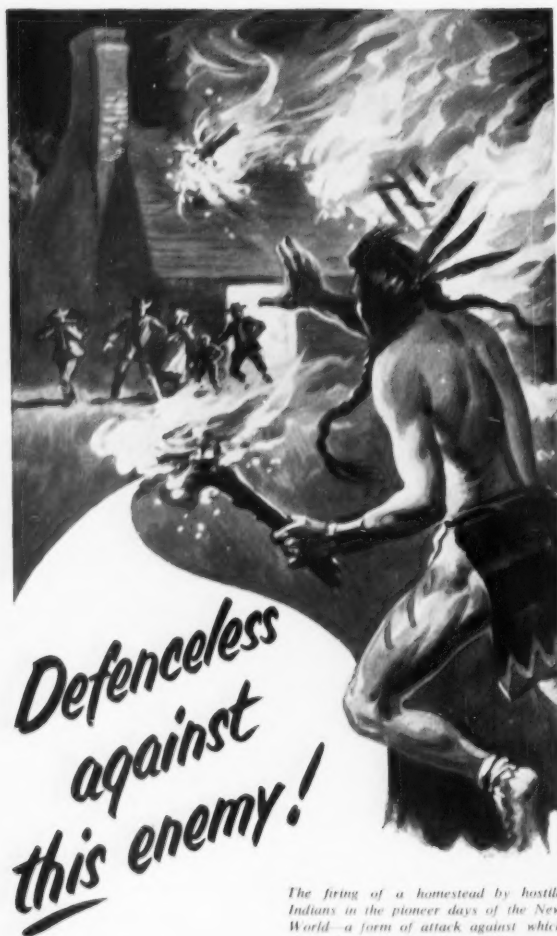


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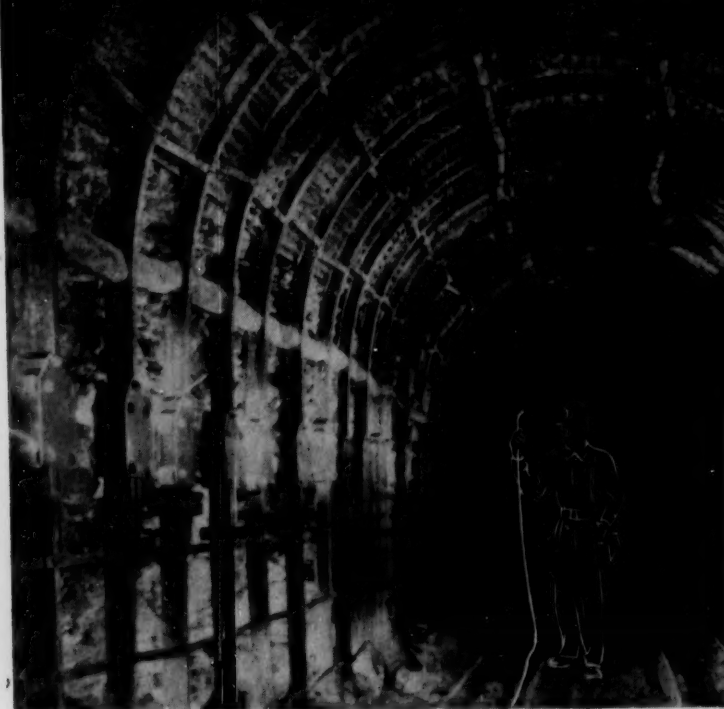
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